

A HOLDING MECHANISM FOR HOLDING OF FABRICS

[0001] The invention relates to a holding mechanism for holding of pieces of fabric, comprising a base holder, which can be fastened on a wall, and a rocker arm, which can be arranged pivotally about an axis of rotation on the base holder and having an upper and a lower leg, whereby a piece of fabric, which is to be held, can be clamped between a first clamping surface provided on the lower leg of the rocker arm and a second clamping surface.

[0002] Such holding mechanisms are, for example, used to hang up towels, bath towels, washcloths or the like. Several modifications of such holding mechanism are described, for example, in the German Gebrauchsmuster DE 96 23 995. These holding mechanisms have one-legged or two-legged rocker arms. The piece of fabric can be clamped in a modification with a one-legged rocker arm, which is pivotally hinged on a base plate, between clamping surfaces on the base plate and on a lower leg of the rocker arm. An upper leg of the rocker arm is designed like a weight, which deviates the lower leg of the rocker arm in direction of the base plate and thus provides the clamping force for clamping of the piece of fabric. It is indeed possible with this holding mechanism to hang up a piece of fabric without a loop, eyelet or the like. However, the operation of the holding mechanism is complicated since the user of the holding mechanism requires both hands: one hand opens and closes the rocker arm, whereas the other hand guides the towel between the clamping surfaces. In addition only pieces of fabric up to a predetermined weight can be clamped into the holding mechanism. When exceeding this predetermined weight the gravity of the upper leg of the

rocker arm is no longer sufficient to reliably clamp the piece of fabric between the clamping surfaces.

[0003] It is therefore the purpose of the present invention to improve the operating ability of a holding mechanism of the above-identified type.

[0004] To attain the purpose a holding mechanism of the above-identified type provides that the clamping surfaces define an upwardly open receiving channel for the piece of fabric to be held, and that at least one bearing surface for placing of the piece of fabric is provided on the upper leg of the rocker arm so that a piece of fabric, which has been moved into the receiving channel, is placed over the bearing surface and lies on the bearing surface, operates by gravity the rocker arm, whereby the first is deviated toward the second clamping surface and a section of the piece of fabric, which section is between the clamping surfaces, is clamped.

[0005] The holding mechanism can be easily operated. One hand is sufficient to guide a piece of fabric, for example, a bath towel, a hand towel or washcloth, which is to be placed over the rocker arm. The holding mechanism can reliably clamp and hold pieces of fabric independently of their weight. The holding mechanism is advantageously adjusted to the size of the object it is to receive, for example a large bath towel or a comparatively small washcloth. The inventive holding mechanism is optically pleasing. The holding mechanism does not damage the piece of fabric which is to be held.

[0006] Further suitable and advantageous developments of the invention are disclosed in the dependent claims and the description.

[0007] Restoring means are advantageously provided, with which a predetermined resting distance between the clamping surfaces can be adjusted, even when no piece of fabric exists between the clamping surfaces. The

restoring means keep the receiving channel open so to speak so that the piece of fabric can be easily guided in between the clamping surfaces and can be placed over the bearing surface. Several modifications, which can be used by themselves or in combination, are suggested for the restoring means. For example, mutually attracting or repelling magnets can be provided on the rocker arm and/or on the base holder. Furthermore a spring arrangement can be used, which swings the rocker arm into the resting position. The spring arrangement can, for example, house a coil spring or the like. It is also possible that the restoring means are, so to speak, formed by the rocker arm itself, namely when a suitable weight distribution on the upper and lower leg is provided on the rocker arm. For example, a weight can be arranged on the lower leg of the rocker arm.

[0008] The second clamping surface associated with the first clamping surface is advantageously formed by the base holder itself. It is also possible that this second clamping surface, when the holding mechanism is fastened on the wall, is formed entirely or partially by the wall.

[0009] The two clamping surfaces are advantageously essentially oriented along the axis of rotation.

[0010] The rocker arm is advantageously bent. "Bent" is to be understood in a broad sense. For example, the rocker arm can also be arched. The bent area exists advantageously in the area of the axis of rotation.

[0011] Rounded areas, chamfers or the like are advantageously provided on the rocker arm so that the piece of fabric can be easily guided into the receiving channel. It is also preferred that rounded areas or chamfers are provided on the free ends of the upper and/or the lower leg of the rocker arm.

[0012] A horizontal chamfer and/or rounded area is advantageously provided in particular in the area of the

axis of rotation on the rocker arm. The receiving channel is advantageously open on the side or in front.

[0013] The first and/or the second clamping surface have advantageously a projection for holding of the piece of fabric. Recesses advantageously corresponding to the projection - there may also be several projections - are provided on the second or first clamping surface. The projections or recesses advantageously form closing shapes.

[0014] Rubber coatings, grooves or the like are advantageously provided on the first and/or second clamping surface to better hold the piece of fabric.

[0015] To fasten the base holder on the wall, the invention suggests various modifications. For example, a receiving means for fastening on a head of a screw mounted on the wall can be provided. The receiving means is, for example, arranged on the backside of the base holder. It can be an inverted T-shaped groove. A wedge-shaped channel for clamping of the screw head is advantageously provided within the groove.

[0016] Several exemplary embodiments of the invention will be discussed in greater detail hereinafter in connection with the drawings, in which:

[0017] Figure 1 is a side view of a first exemplary embodiment of an inventive holding mechanism still in the resting position, however, with an already inserted towel;

[0018] Figure 2 illustrates the holding mechanism from above, however, without the towel;

[0019] Figure 3 is a side view of the holding mechanism according to Figures 1 and 2 in a clamping position, in which a towel is clamped and held by the rocker arm;

[0020] Figure 4 illustrates the holding mechanism according to Figure 3 from above, however, without the piece of fabric;

[0021] Figure 5 is a top view of a modification of the holding mechanism according to Figures 1 to 4;

[0022] Figure 6 is a detail cross-sectional view of the spring arrangement according to Figure 5;

[0023] Figure 7 is a rear view of a base holder of the holding mechanism according to Figures 5 and 6, which illustrates a receiving means for fastening of the base holder on a wall;

[0024] Figure 8 is a top view of a further modification of the holding mechanism according to the preceding figures with rounded areas or chamfers and projections or recesses existing in the area of the clamping surfaces;

[0025] Figure 9 is a side view of the holding mechanism according to Figure 8;

[0026] Figure 10 is a side view of a second exemplary embodiment of an inventive holding mechanism with a slightly rounded, not bent rocker arm;

[0027] Figure 11 is a front view of the holding mechanism according to Figure 10;

[0028] Figure 12 is a side view of a third exemplary embodiment of an inventive holding mechanism with two rocker arms pivotally hinged on a base holder;

[0029] Figure 13 is a front view of the holding mechanism according to Figure 12;

[0030] Figures 14a, 14b are perspective side views of a fourth exemplary embodiment of an inventive holding mechanism with a knob-like rocker arm;

[0031] Figure 15 is a cross-sectional view of a base holder of the holding mechanism according to Figures 14a, 14b;

[0032] Figure 16 illustrates a fifth exemplary embodiment of an inventive holding mechanism with a plate-like rocker arm;

[0033] Figures 17a, 17b are oblique front perspective views of a sixth exemplary embodiment of an inventive holding mechanism with a rocker arm hinged on the upper end of the base holder; and

[0034] Figures 18a, 18b are oblique front perspective views of a seventh exemplary embodiment of an inventive holding mechanism with a rocker arm, which has a particularly large bearing surface.

[0035] The following description describes several exemplary embodiments of the inventive holding mechanism, whereby identical or identically acting components have the same names and reference numerals. The exemplary embodiments illustrated in Figures 1 to 13 and Figure 16 are partly schematically illustrated in order to emphasize in particular the operation of the inventive holding mechanism.

[0036] Figures 1 to 9 illustrate a first exemplary embodiment of an inventive holding mechanism 10 and modifications 10a (Figures 5 to 7) and 10b (Figures 8, 9), which in principle have the same design. The following description is therefore, to begin with, limited to the holding mechanism 10.

[0037] A rocker arm 12 is in the holding mechanism 10 hinged pivotally about an axis of rotation 13 on a base holder 11. The base holder has, for example, two legs, whereby one wall leg 14 is fastened, for example, by means of screws, an adhesive, an adhesive strip or the like on a wall 16. One holding leg 15 projects, for example, at a right angle from the wall leg 14 or from the wall 16. A pivot pin or a rotary shaft 17 extends through the holding leg 15 and the rocker arm 12. The pivot pin 17 extends essentially parallel to the wall leg

14. The pivot pin 17 sits, for example, fixedly in the holding leg 15. The rocker arm 12 is supported pivotally or rotatably on the pivot pin 17 so that the rocker arm 12 is supported for movement about the axis of rotation 13 on the base holder 11. A reverse modification is also possible, where the pivot pin 17 sits fixedly in the rocker arm 12 and the holding leg 15 pivotally supports the pivot pin 17.

[0038] The rocker arm 12 is, for example, obtuse angled. The axis of rotation 13 extends advantageously through the bend area or the angle area of the rocker arm 12. A through bore 18 for receiving the pivot pin 17 can, for example, be provided in this area.

[0039] The legs 14, 15 of the base holder 11 are, for example, plate like. The rocker arm 12 can also be designed plate like.

[0040] A lower leg 20 of the rocker arm 12 and of the holding leg 15 define in a rest position of the rocker arm 12, which rest position is illustrated in Figures 1 and 2, an upwardly open receiving channel 19 for receiving a piece of fabric 22, for example, a towel, a washcloth or the like. An upper leg 21 of the rocker arm 12 is inclined away from the holding leg 15 so that the receiving channel 19 is open and funnel-shaped in upward direction. It is thus possible for the piece of fabric 22 to be guided from above and/or from the side into the receiving channel 19 and can be placed over the upper leg 21. This can also be done with one hand. The piece of fabric 22 rests then on a bearing surface 23 on the upper side of the upper leg 21. A first section 24 of the piece of fabric 22 hangs then in the area of the receiving channel 19. A second section 25 of the piece of fabric 22 hangs on the side of the rocker arm 12 remote from the holding leg 15 or the wall, down from said rocker arm so that gravity acting on the piece of

fabric 22, in particular of the section 25, operates the rocker arm 12, whereby the lower leg 20 deviates toward the holding leg 15 of the base holder 11 or toward the wall 16. The first section 24 of the piece of fabric 22 is in this manner clamped between a first clamping surface 26 on the lower leg 20 and a second clamping surface 27 in the lower area of the holding leg 15. The rocker arm 12 assumes thereby a clamping position as illustrated in Figures 3 and 4.

[0041] An operator of the holding mechanism 10 can influence the clamping action, for example, by choosing the second section 25 of the piece of fabric 22 to be shorter or longer. When designing the holding device 10 it is possible to influence the clamping action among others also through the geometry of the rocker arm 12, whereby, for example, a stronger bend results in a greater clamping force, a lesser bend in a smaller clamping force. Furthermore it is possible to provide the clamping surfaces 26 and/or 27 completely or partially with grooves, rubber coatings or the like.

[0042] The base holder 11 and the rocker arm 12 can be manufactured out of various materials, for example, out of metal, in particular steel or aluminum, plastic, for example, PLEXIGLAS, wood or the like. It is understood that the base holder 11 and the rocker arm 12 can consist of different materials, whereby it is also possible to use composite materials. Grooves, rubber coatings or other anti-slip means in the area of the clamping surfaces 26, 27 can be formed in one piece by the base holder 11 or the rocker arm 12 or, however, can also be inserted materials. Anti-slip means can also be provided on the bearing surface 23.

[0043] Restoring means 30 are advantageously provided in order to hold the rocker arm 12 in the resting position or in order to return the rocker arm 12 from the

clamping or any other position into the resting position illustrated in Figures 1 and 2. The restoring means 30 adjust a resting distance 31 between the clamping surfaces 26, 27 when no piece of fabric exists between these surfaces (see Figure 2). The clamping surfaces 26, 27 face the receiving channel 19. The restoring means 30 can be formed, for example, by a correspondingly heavy lower leg 20 of the rocker arm 12. A weight, for example, a lead weight or the like, can for this purpose be arranged on the lower leg 20. Such a weight can be cast into the rocker arm 12. However, it is also possible that the lower leg 20 is correspondingly long and/or consists of a different heavier material than the upper leg 21. Furthermore it is possible, for example, for cavities to exist in the upper leg 21 in order to reduce its weight.

[0044] The restoring means 30 of the holding mechanism 10 house mutually repelling magnets 32, 33 on the lower leg 20 of the rocker arm 12 or in the area of the second clamping surface 27 on the holding leg 15 of the base holder 11. It has proven to be advantageous to arrange the magnets 32, 33 near the axis of rotation 13. Figures 2 and 4 show furthermore attracting magnets 34, 35 of the restoring means 30. The magnet 34 is arranged, for example, on a side of the rocker arm 12, which side faces the wall leg 14 of the base holder 11. An arrangement on the lower or upper leg 20, 21 of the rocker arm 12 is thereby possible. The magnet 35 or instead, for example, a magnetic conducting surface (for example out of iron) is arranged opposite the magnet 34 on the holding leg 15.

[0045] A stop 28 can be provided to hold the rocker arm 12 in the resting position. The stop 28 defines the rotary deviation of the rocker arm 12 so that the rocker arm 12 cannot deviate farther than to the resting

distance 31. The stop 28 projects, for example, in front of the holding leg 15 in direction of the rocker arm 12 so that the rocker arm 12 during a rotating motion hits the stop 28 with, for example, its lower leg 20.

[0046] The restoring means 30 can have mutually attracting magnets 29, 29' on the stop 28 and on the lower leg 20 of the rocker arm 12.

[0047] The restoring means 30 in the holding mechanism 10a (Figures 5 to 7) house a spring arrangement 36. The spring arrangement 36 houses a torsion spring 37, for example, a coil spring, which is supported at one end on the rocker lever 12 and at the other end on the base holder 11. The torsion spring 37 is, for example, a coil spring, through which extends the pivot pin 17. The torsion spring 37 can have one (Figure 6) or several (Figure 5) coils. Each end of the torsion spring 37 is received in a recess 38, 39 on the rocker arm 12 or base holder 11. Thus the torsion spring 37 is supported on the rocker arm 12 or the base holder 11. The spring arrangement 36 is pretensioned when the piece of fabric 22 is applied and thus the rocker arm 12 is deviated into the tilted position (see Figure 3). When the piece of fabric 22 is removed from the holding mechanism 10a, the spring arrangement 36 returns the rocker arm 12 again into the resting position illustrated in Figure 5.

[0048] It is understood that the restoring means 30 can have also in a different area a spring arrangement like the spring arrangement 36, for example, on the side of the holding leg 15, which side is opposite the spring arrangement 36. This spring arrangement could be supported at one end on the holding leg 15 and at the other end on the pivot pin 17, for example, on its head, whereby the pivot pin 17 would then be advantageously fixedly connected to the rocker arm 12 and would be rotatably supported on the holding leg 15.

[0049] The holding mechanisms 10, 10a, 10b, can, for example, be glued to the wall 16, for example, by means of a double-sided adhesive strip. A preferred modification of the invention, however, provides for a fastening by means of screws 40. The screws 40 are screwed into the wall 16. The base holder 11 is suspended on the screws 40, whereby heads 42 of the screws 40 are received in receiving means 41 on the backside of the base holder 11, more precisely of the wall leg 14. The receiving means 41 are, for example, designed like a T-groove. A, for example, wedge-shaped channel can be constructed inside of the receiving means 41, which channel clamps the screw heads 42. The receiving means 41 have, for example, larger openings in their lower area so that the screw heads 42 can be introduced therein. The receiving means 41 are, however, narrowed down in their upper area so that the base holder 11 cannot slide off the screw heads 42.

[0050] A rocker arm 12b of the holding mechanism 10b (Figures 8, 9) is modified compared with the rocker arm 12. Chamfers and slopes exist on the rocker arm 12b, which chamfers and slopes ease a lateral guiding of the piece of fabric 22 into the receiving channel 19. For example, lateral chamfers or slopes 43, 44 are provided on the side of the rocker arm 12b, which side does not face the holding leg 15. A horizontal chamfer or slope 45 in the bend area of the rocker arm 12 eases also the guiding of the piece of fabric 22 into the receiving channel 19 and in addition lends the rocker arm 12b an attractive design. The horizontal chamber 45 is sloped toward the open side of the rocker arm 12b remote from the holding leg. One could in this respect also identify the horizontal chamfer 45 as a sloped surface. Further rounded areas are possible, for example, at the upper

and/or lower end of a rocker arm, as it is, for example, illustrated in Figure 10.

[0051] Projections 46 and/or recesses 47 corresponding with these projections can be provided in the area of the clamping surfaces 26, 27 in order to improve the clamping action. The projection 46 is received in the clamping position of the rocker arm 12b, which clamping position is illustrated in dashed lines in Figure 9, for example, the recess 47 or presses a piece of fabric not illustrated in the figure into the recess 47, which improves the clamping action. The projection 46 and the recess 47 can, for example, be convex or concave.

[0052] A rocker arm 52 is rotatably hinged on a base holder 51 in a holding mechanism 50 illustrated in Figures 10 and 11. Differing from the rocker arm 12, the rocker arm 52 is not bent but extends essentially straight. The rocker arm 12 is only slightly bent, whereby its radius is in the mounted state oriented toward the wall 16. The base holder 51 has one single arm 54 projecting from the wall 16, which arm 54 is, for example, screwed to the wall 16. The rocker arm 52 is pivotally hinged on the arm 54 by means of a pivot pin 53, which extends essentially parallel to the wall 16. Differing from the base holder 11, the base holder 51 does not have a wall leg. Accordingly a clamping surface corresponding to the clamping surface 27 also does not exist in the base holder 51. The rocker arm 52 clamps a piece of fabric not illustrated in the figures with a first clamping surface 16, which is provided at its lower arm, against a clamping surface 57 formed by the wall 16, whereby it assumes a clamping position illustrated in dashed lines in Figure 1.

[0053] Figures 12 and 13 illustrate a holding mechanism 60, which essentially is the same as the holding mechanism 50, however, is suited for the

independent holding of two pieces of fabric. Two rocker arms 62a, 62b like the rocker arm 52 straddle a base holder 61, which has an arm 64 projecting, for example, horizontally from the wall 16 like the arm 54. The rocker arms 62a, 62b are pivotally arranged on a pivot pin 63, which penetrates through the arm 64, for example, parallel to the wall 16. The two rocker arms 62a, 62b can be pivoted independent from one another so that, for example, a towel can be placed over the rocker arm 62a, whereby it clamps the towel between clamping surfaces 66, 67, whereas the rocker arm 62b remains free. A towel can later on also be placed over the rocker arm 62b, whereby the rocker arm 62a is not being operated.

[0054] This is not possible in the case of a holding mechanism 70 illustrated in Figure 16, where a plate-like rocker arm 72 is pivotally hinged to a base holder 71. The hinge point is thereby approximately in the center area of the rocker arm 72 so that in principle a piece of fabric can be guided in on both sides of the rocker arm 72 and can be placed over the rocker arm 72 in the afore-described manner.

[0055] A modification of the invention, which is particularly attractive in an optical respect, is illustrated in Figures 14a, 14b and 15. A rocker arm 82 is pivotally hinged on a base holder 81 by means of a not visible pivot pin 83. The rocker arm 84 has on the upper side a generous bearing surface 84. The bearing 84 is essentially horizontally oriented in the mounted state of the holding mechanism 80. The rocker arm 82 is in its lower area arched like a projection 85 toward the wall 16 not illustrated in the figure.

[0056] Figure 15 illustrates a partially schematized cross-sectional view of the base holder 81. The base holder 81 has two parts, a base part 86 which can be fastened on the wall 16, and a holding part 87 covering

same. The holding part 87 is so to speak slipped over the base part 86 and is fastened by means of a screw 88, for example a setscrew. The screw 88 is preferably arranged in an area of the base holder 81 which is not visible. The screw 88 penetrates through the holding part 87, for example, from below and engages a recess 89 on the base part 86. The base part 86 is fastened on the wall 16 by means of a screw 90. The screw 90 is covered by the holding part 87.

[0057] Instead of the fastening via the screw 88 or in addition to this fastening it is also possible to screw the holding part 87 to the base part 86. Suited for this purpose is, for example, an adhesive strip 91 or any other type of adhesive which is applied in particular on the front side of the base part 86 and is arranged between the base part 86 and the holding part 87. When the holding part 87 sits essentially form-lockingly on the base part 86, which is preferred, the adhesive tape 91 must make available only the comparatively small horizontal forces, whereas the greater vertical forces are absorbed by the form lock.

[0058] A rocker arm 102 is in a holding mechanism 100 illustrated in Figures 17a and 17b pivotally arranged on a pivot pin or a rotary shaft not visible from outside. The rocker arm 102 is rotatably hinged on the upper end of the base holder 101. When the rocker arm 102 is pivoted from the resting position illustrated in the figures into its not illustrated clamping position, a gap is created approximately in the area of a point marked by an arrow 104. Furthermore a first clamping surface 106 clamps a not illustrated piece of fabric against a second clamping surface formed by the wall not illustrated in Figures 17a, 17b.

[0059] A holding mechanism 110 illustrated in Figures 18a and 18b has a curved rocker arm 112 which is

pivots on a base holder 111. The base holder 111 has a wall leg 114 and a holding leg 115 of the type of the legs 14, 15 of the holding mechanism 10. A bearing surface 113 is constructed on the upper end of the rocker arm 112. The bearing surface 113 can have a recess 116, as it is illustrated in Figure 18a. The recess 116 is closed off by an insert element 117 in Figure 18b, which element can, for example, be a colored piece of plastic or any other type of decorative element. The bearing surface 113 can also have anti-slip means, for example, grooves, a rubber coating or the like.

[0060] Further modifications of the invention are easily possible. For example, the upper and/or lower leg length of the rocker arm 12 can be varied. Furthermore the width of the rocker arm 12 can be changed depending on its use, for example, for folding a wider towel or for holding a narrower washcloth. With the help of the restoring means 30 and the geometric design of the base holder 11 and rocker arm 12 it is also possible to define the resting distance 31 depending on use.

[0061] It would also be possible to fasten the holding mechanism 10 with its holding leg 15 on the wall 16, whereby the receiving channel 19 would then be forwardly open.

[0062] Furthermore a modification with a rocker arm rotatably supported on two holding legs is possible. For example, a second holding leg 15 could be provided opposite the holding leg 15, whereby this second holding leg and the holding leg 15 are, for example, oriented parallel to one another, and project forwardly from the wall leg. The rocker arm would in this modification be supported on both holding legs and would define with these and the wall leg a receiving channel, which is open in upward direction, however, not to the side.